



# FMU-160B: 105mm PROXIMITY FUZE FOR THE AC130

**EDC**

*45th Annual Fuze Conference*



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# Presentation Outline



- **Application**
- **Need for Improved Proximity Fuze**
- **Design Goals**
- **Design Approach**
  - ✧ **RF Front End**
  - ✧ **Signal Processor**
  - ✧ **Battery**
  - ✧ **S&A**



# Application



## ➤ AC-130 Gunship

- ✧ Air Force Special Operations Command (AFSOC)
- ✧ Modified M137 105mm Cannon





# **Need for Improved Proximity Fuze**



- **High Fragmentation (HF) Version of HE M1 (MOD) Cartridge**
  - ✧ **Maximum effectiveness requires precise HOB regardless of target reflectivity and approach angle**
  - ✧ **Proximity fuzes currently available are not optimized for the HF round**
    - ◆ **Wide HOB variation**
    - ◆ **Average HOB not optimum**
    - ◆ **Insufficient reliability**



# Design Goals



- **Tight HOB Control**
  - ✧ **Nominal HOB = 15 ft**
- **Impact Back-up Mode**
- **Highly Reliable**
- **Surface Mount Technology**
- **Maximum Commonality to Existing Designs**
  - ✧ **Proven Reliability**
  - ✧ **Reduced Cost**



# Design Approach

- RF Front End
- Signal Processor
- S&A
- Battery



# RF Front End



- **Based on Highly Successful M734A1 Multi-Option Fuze for Mortars (MOFM)**
  - ✧ **MMIC Transceiver**
  - ✧ **Circular Patch Antenna**
    - ◆ **Wide Bandwidth**
    - ◆ **Broad Coverage**
  - ✧ **Additional IF Gain Stage**





# Signal Processor



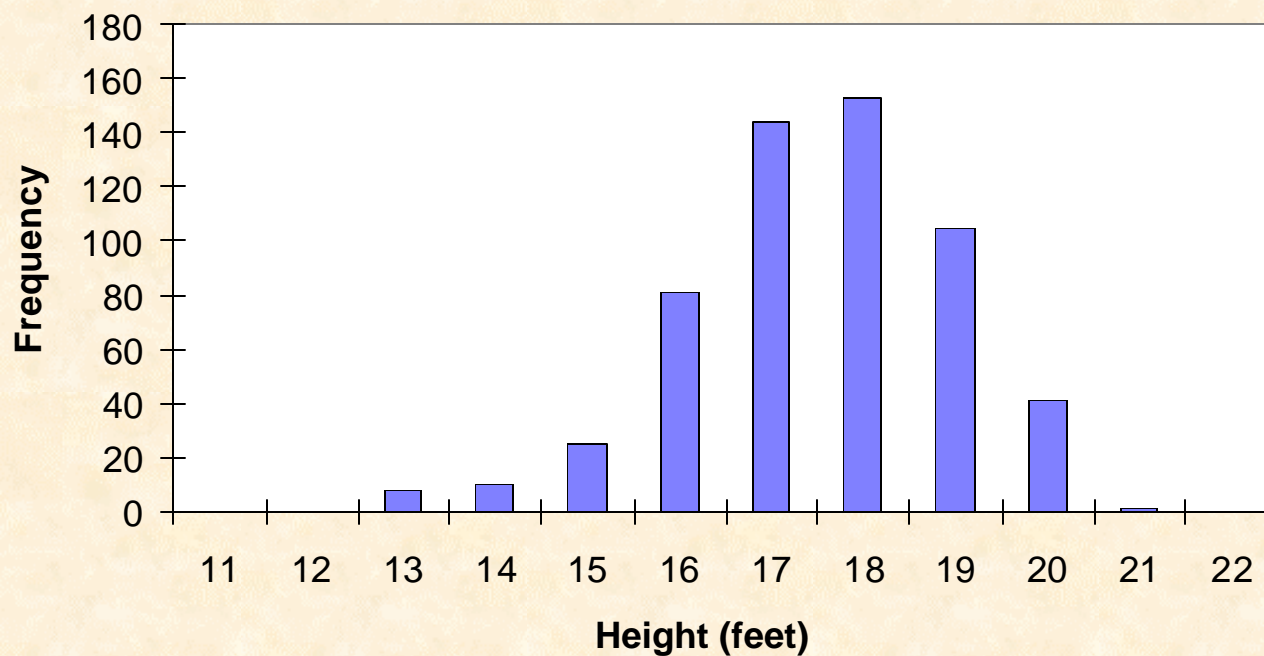
- **Same Signal Processor as the M734A1 MOFM**
- **Utilizes DDR Technology**
  - ✧ **Accurate HOB Control**
  - ✧ **Robust Anti-jamming Performance**
- **Highly Integrated**
  - ✧ **Single Chip Solution**
  - ✧ **High Reliability**
  - ✧ **Low Cost**



# TYPICAL PERFORMANCE



**M734A1 - 120mm Prox Mode, Charge 0, -40°F, 1500 QE  
HOB Histogram**





**S&A**



- **MK41 is a Qualified Design**
- **Low Cost**
- **Performance Parameters:**
  - ✧ **Setback g Level:**           **26,000 g**
  - ✧ **Spin Rate:**                   **410 rps**
  - ✧ **Velocity:**                   **3075 ft/sec**



# Battery



- **Manufactured the Netherlands by Thales Munitronics**
  - ✧ **Formerly Signaal USFA**
- **Chemistry: Lithium**
- **Proven Design for Artillery**
- **Performance Parameters:**
  - ✧ **Operational Life:** 150 seconds min
  - ✧ **Current:** 150 mA
  - ✧ **End of Life Voltage:** 5.5 Volts min
  - ✧ **Rise Time:** 100 mSec max
  - ✧ **Required Setback:** 2000 g's min
  - ✧ **Required Spin:** 2500 rpm min
  - ✧ **Operating Temperature:** -40F to +145F



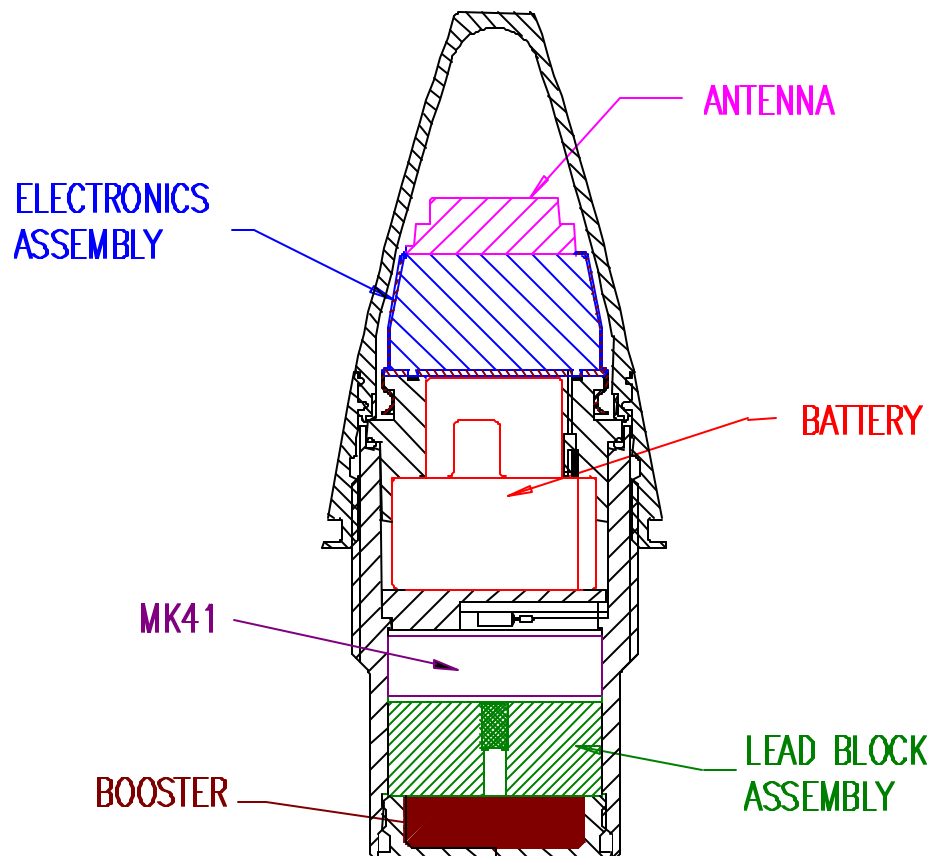
# Photo of FMU-160/B

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# Summary



➤ **ACCURATE**

➤ **RELIABLE**

➤ **AFFORDABLE**